



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/664,866

09/22/2003

Toru Takayama

0756-7201

4319

31780 7590 03/05/2007

ERIC ROBINSON

PMB 955

21010 SOUTHBANK ST.

POTOMAC FALLS, VA 20165

EXAMINER

LE, THAO P

ART UNIT

PAPER NUMBER

2818

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

03/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/664,866

Applicant(s)

TAKAYAMA ET AL.

Examiner

Thao P. Le

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This office action is in response to amendment filed on 01/08/2007.

An RCE has been filed.

Claims 1-9, 16-17 have been amended.

Claims 24-32 have been added.

Claims 1-14, 16-32 are pending.

Remarks of applicant in regarding the Dairiki reference are fully considered and persuasive, therefore, the rejection based on Dairiki reference has been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Joo, U.S. Publication No. 2002/0056839.

Regarding claims 1, 3, 5, 6, 7, Joo discloses a method for manufacturing a semiconductor device (See Figs. 4A-4G and Cols. 1-6) comprising:

forming a semiconductor layer 41 (a-silicon) over a glass substrate 40 (Fig. 4A);

forming an island-like insulating layer 42 (Fig. 4B) over the semiconductor layer;

forming an island-like light-absorbing layer 47 (Fig. 4F) over the semiconductor layer 41 with the insulating layer 42 interposed therebetween, so that the light-absorbing layer 47 that covers the whole surface of the semiconductor layer and end portions of the island-like light-absorbing layer are arranged outside of the semiconductor layer (Fig. 4F, paragraph 0041), the island-like light-absorbing layer being capable of absorbing a pulsed light (light from lamp [0041]);

performing a heat treatment for the semiconductor layer and the insulating layer by selectively heating the light-absorbing layer through an irradiation of the pulsed light (Fig. 4F, [0041]);

patterning the light-absorbing layer after performing the heat treatment (Fig. 4G).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 8, 11-12, 16, 19-20, 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joo, U.S. Publication No. 2002/0056839.

Regarding claims 2, 4, 8, 16, Joo discloses a method for manufacturing a semiconductor device (See Figs. 4A-4G and Cols. 1-6) comprising:

- forming a semiconductor layer 41 (a-silicon) over a glass substrate 40 (Fig. 4A);
- forming an island-like insulating layer 42 (Fig. 4B) over the semiconductor layer;
- forming an island-like light-absorbing layer 47 (Fig. 4F) over the semiconductor layer 41 with the insulating layer 42 interposed therebetween, so that the light-absorbing layer 47 that covers the whole surface of the semiconductor layer and end portions of the island-like light-absorbing layer are arranged outside of the semiconductor layer (Fig. 4F, paragraph 0041), the island-like light-absorbing layer being capable of absorbing a pulsed light (light from lamp [0041]);

- performing a heat treatment for the semiconductor layer and the insulating layer by selectively heating the light-absorbing layer through an irradiation of the pulsed light (Fig. 4F, [0041]);

- patterning the light-absorbing layer after performing the heat treatment (Fig. 4G).

Still regarding claims 2, 4, 8, 16, Joo fails to disclose the length of the light-absorbing of one side is equal or less than a thickness of the glass substrate and wherein a transmission factor of a pulsed light by the island-like light-absorbing layer is 7- percent or less and a transmission factor of the pulsed light by the glass substrate is 70 percent or more. It would have been obvious to one having ordinary skill in the art

Art Unit: 2818

that the length of the light-absorbing layer has to be equal or less than the glass substrate in order for the light-absorbing layer not to block all light and also to protect the glass substrate from over heated by the light. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the selection of such parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art. "Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, or in combination of the parameters would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Regarding claim 23, Joo discloses the light-absorbing layer is formed to cover the semiconductor layer (Fig. 4F).

Regarding claims 11-12, 19-20, 24-32, Joo discloses the light-absorbing layer is metal, Joo fails disclose the percent or width of pulsed light and thickness of the light-absorbing layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the selection of such parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art. "Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, etc., or in combination of the parameters** would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Claims 9-10, 13-14, 17-18, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joo, U.S. Publication No. 2002/0056839, in view of Dairiki, U.S. Patent No. 6,599,818.

Regarding claims 9, 17, Joo discloses the light-absorbing layer is formed from a metal but fails to disclose the light-absorbing layer is metal nitride. Dairiki discloses the light absorbing layer is made of metal nitride. It would have been obvious to one having ordinary skill in the art to use metal nitride to form light-absorbing layer as disclosed in Dairiki because metal nitride will improve device performance.

Regarding claims 10, 13, 14, 18, 21-22, Joo discloses the light source is from lamp. Dairiki discloses the light source is from a xenon flash light, from high pressure, halogen, halide lights. It is inherent that the light source disclosed in Dairiki is a coherent light. It is well known in the art that the lamp in Joo can be halogen or halide lamp.

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

Art Unit: 2818

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-F (10-8).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thao P. Le
Primary Examiner
February 27, 2007.